Suisun Marsh Monitoring Program
Channel Water Salinity Report

Reporting Period: March 2006

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity, which is referred as "specific conductance" (SC). The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below to ensure salinity standards are met to protect habitat for waterfowl in managed wetlands:

Station Identification	Station Name	General Location	Classification
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Classification
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

2. Monitoring Results

2.1 Channel Water Salinity Compliance

During the month of March, 2006, salinity conditions at all five compliance stations are in compliance with channel water salinity standards of SWRCB (Table 1). Compliance with standards for the month of March was determined for each compliance station by comparing the progressive daily mean of high-tide SC with respective standards. The standard for compliance stations C-2, S-64, S-49, S-42 and S-21 are 8.0 mS/cm during March 2006. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below.

$$PDM = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

2.2 Delta Outflow

Outflow for March 2006 started off amazingly high, above 60,000 cfs, as a result of previous months carry over. With more precipitation events in early March, outflow continued to increase to about 140,000 cfs on March 4 before shortly dropping off to about 133,000 cfs on March 6. Thereafter, continued sporadic precipitation resulted in more runoffs and another climb in outflow to a monthly peak of about 171,000 cfs on March 10. Outflow took a down turn thereafter and continued to drop to about 91,000 cfs by March 25, then increased again towards the later part of March and leveled off above 120,000 cfs at the end of the month. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for March 2006 is listed below:

Month	Mean NDOI (cubic feet per second)
March	118,471

2.3 Rainfall

Although much lower than December 2005 high monthly rain totals of 16.69 inches, March 2006 total rainfall of 4.80 inches was still very impressive that it took second place in largest rainfall totals for the month and it was the only month with the most rainiest days during water year 2006. The month's largest daily precipitation occurred on March 12, with a total of 0.80 inches.

Month	Total Rainfall (inches)
March	4.80

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during March 2006 is summarized below.

Date	Gate status	Flashboards status	Boat Lock status
March 1 – 31	Open	Out	Open

Due to high outflows, favorable salinity levels in the marsh continued and the gates remained inoperable with flashboards still out of the maintenance channel. DWR will continue to monitor salinity levels in the marsh and will re-operate the gates and install the flashboards if conditions warrant, however, based on current hydrologic conditions and past experiences, more than likely the gates will not be operational for the remainder of the control season.

3. Discussion

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions during the Reporting Period

During March 2006, salinity levels at Collinsville(C-2), National Steel(S-64), Beldons (S-49), and Volanti(S-42) were all below 3.0 mS/cm as shown in Figure 1. The early week of March salinity levels were similar to February levels, but still very low overall and with continued precipitation events for the most part of March, salinity levels flatten out because it reached its maximum salinity level of freshness for C-2 at the beginning of March, for S-64 by March 13, for S-49 and S-42 by March 24. As for the two monitoring stations, S-35 and S-97, there were no salinity activity throughout March because salinity levels have reached its maximum freshness.

S-21 (Sunrise Club) continued to be inaccessible since late December 2005 due to flooded roadways, thus data was not available to report at S-21 station. However, given the extremely low salinity levels throughout the marsh, standard at S-21 was more than likely met.

Overall, salinity levels in March 2006 were well below standards at all compliance and monitoring stations.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for March 2006 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations resembles that of 2000, but slightly higher in magnitude at most stations, except S97 and S35. Compared to previous nine years, March 2006 salinity levels were ranked eighths in high Specific Conductance.

Table 1

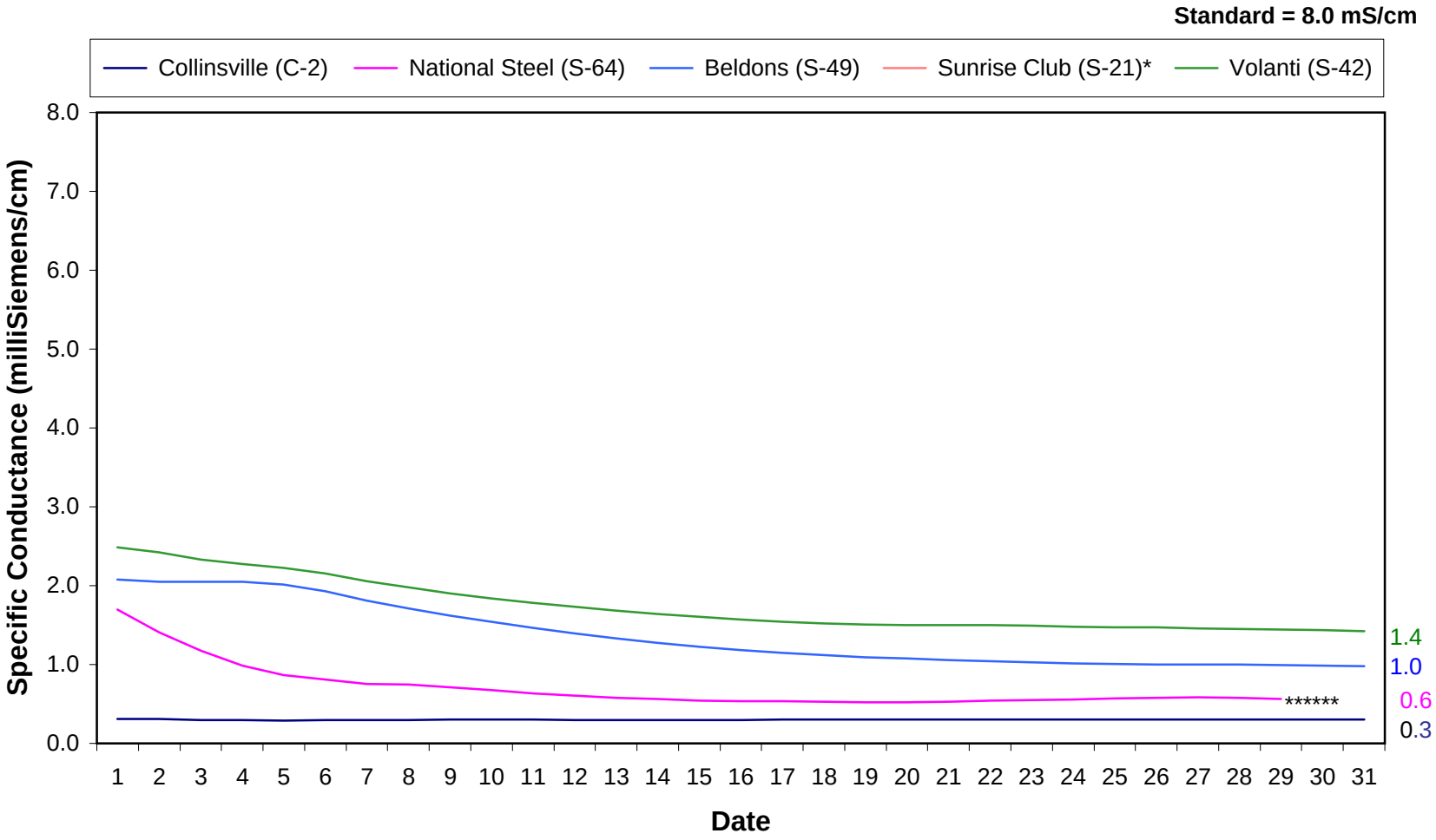
Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations

March 2006

Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	0.3	8.0	Yes
S-64	0.6	8.0	Yes
S-49	1.0	8.0	Yes
S-42	1.4	8.0	Yes
S-21***	n/a	8.0	Yes

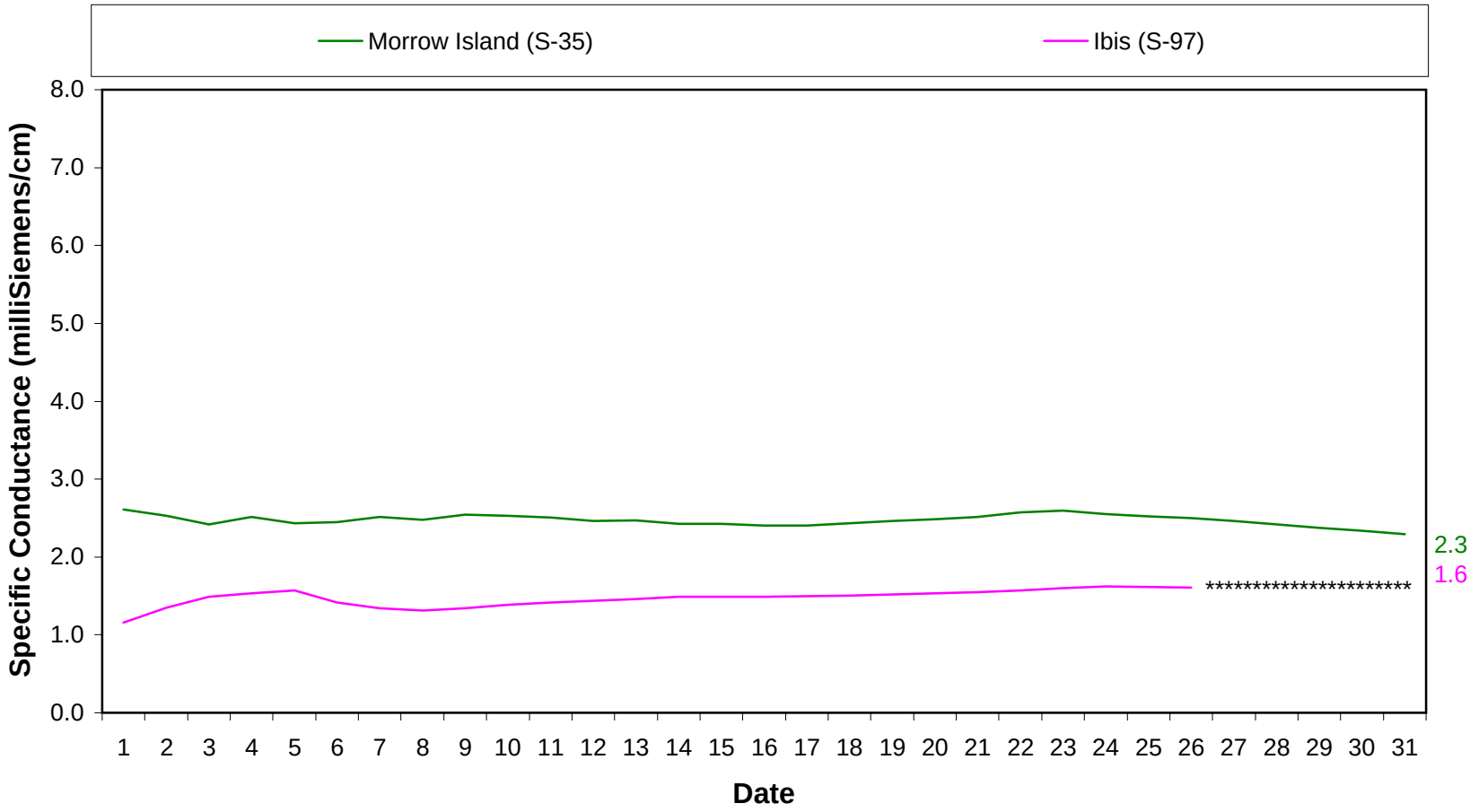
*milliSiemens per centimeter
**The representative data from nearby USBR station is used in lieu of data from station C-2.
***station data was not accessible due to flood water, thus salinity information is not reported. However, salinity levels throughout the marsh was so fresh that standard at this station was likely met.

Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance For Compliance Stations March 2006



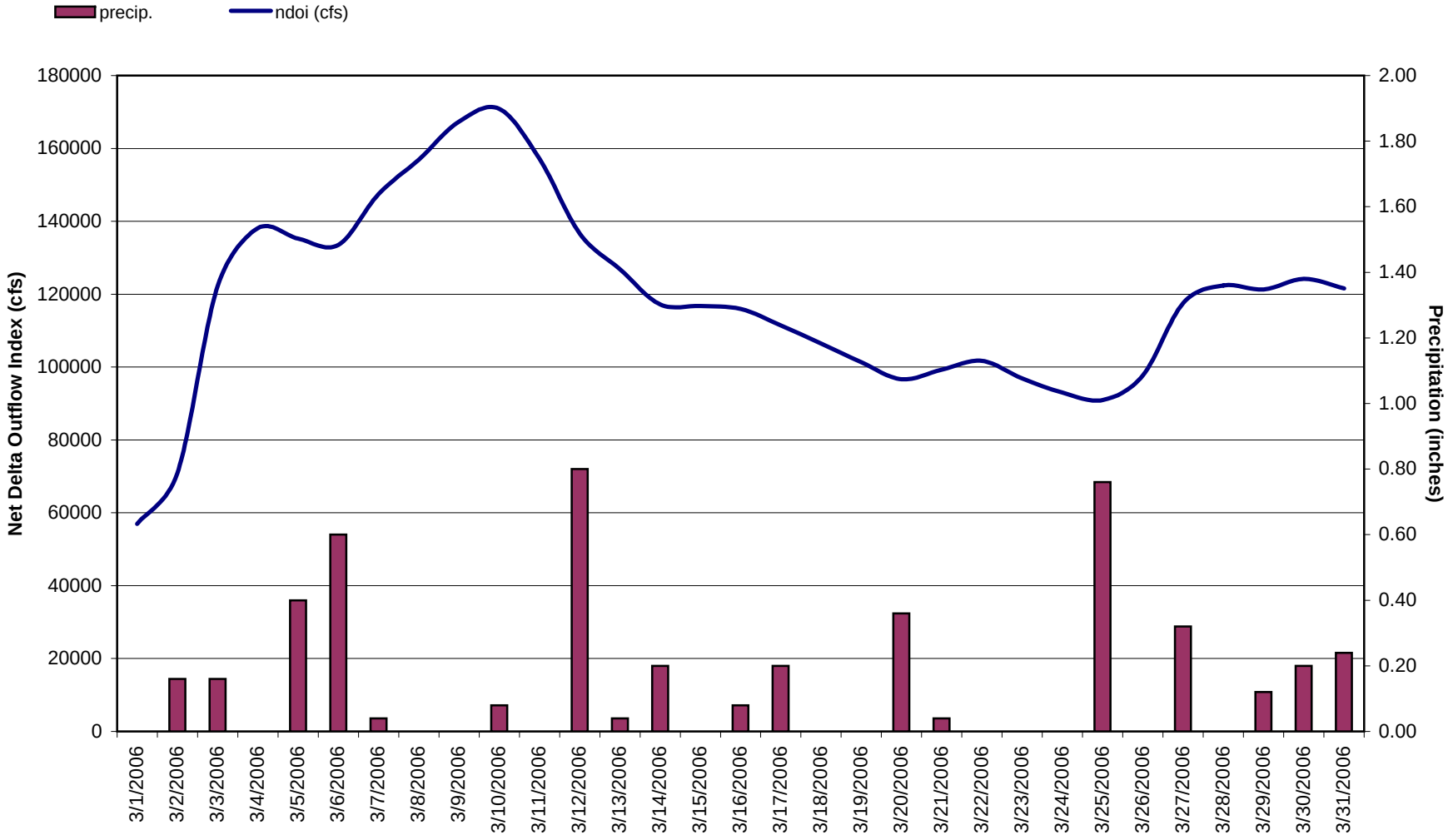
*Data not available due to flooded roadways
******* = missing data due to equipment failure.

Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance For Monitoring Stations S-35 and S-97 March 2006



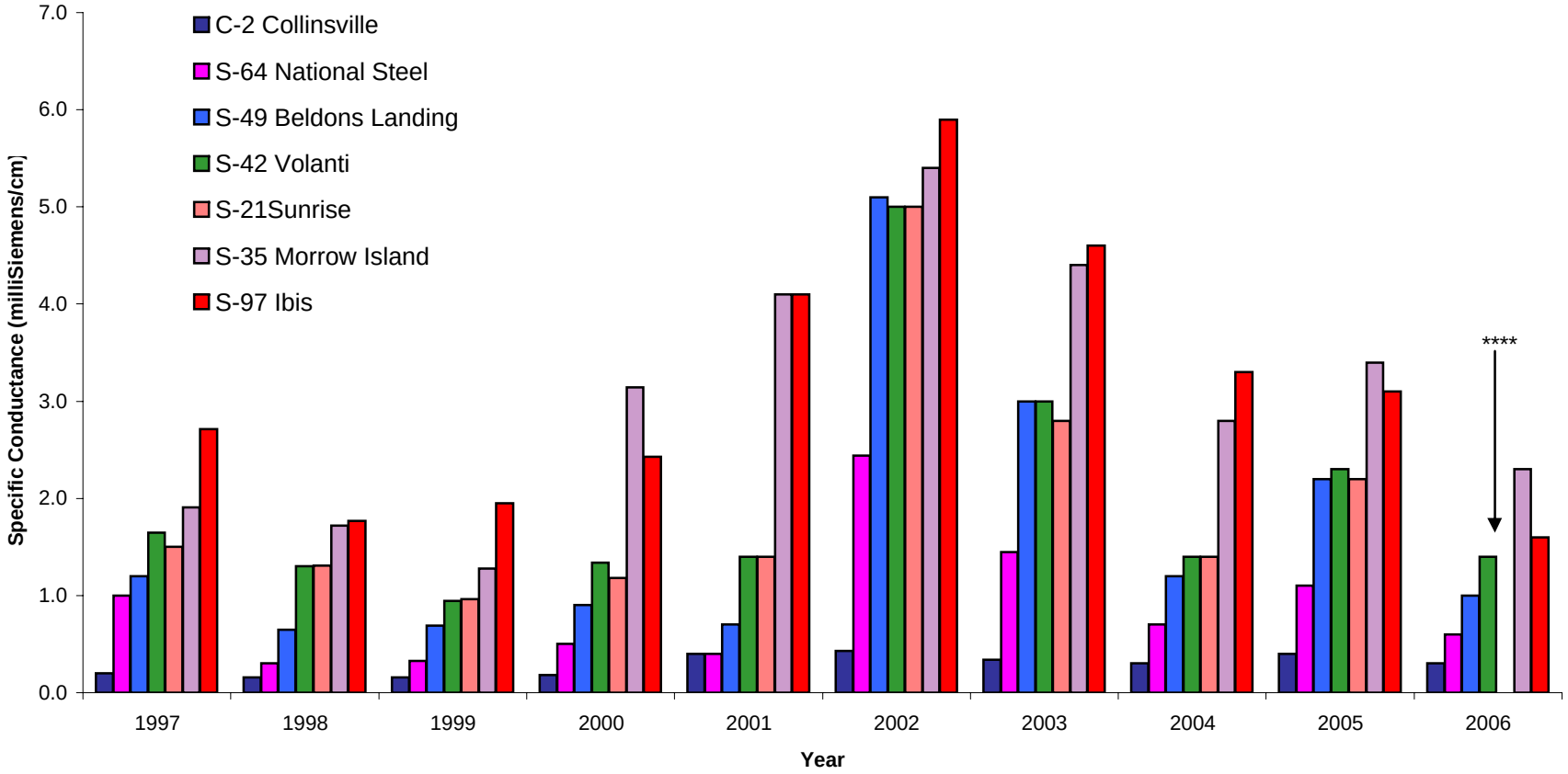
******* = missing data due to equipment failure.

Figure 3. Daily Net Delta Outflow Index and Precipitation*
March 2006

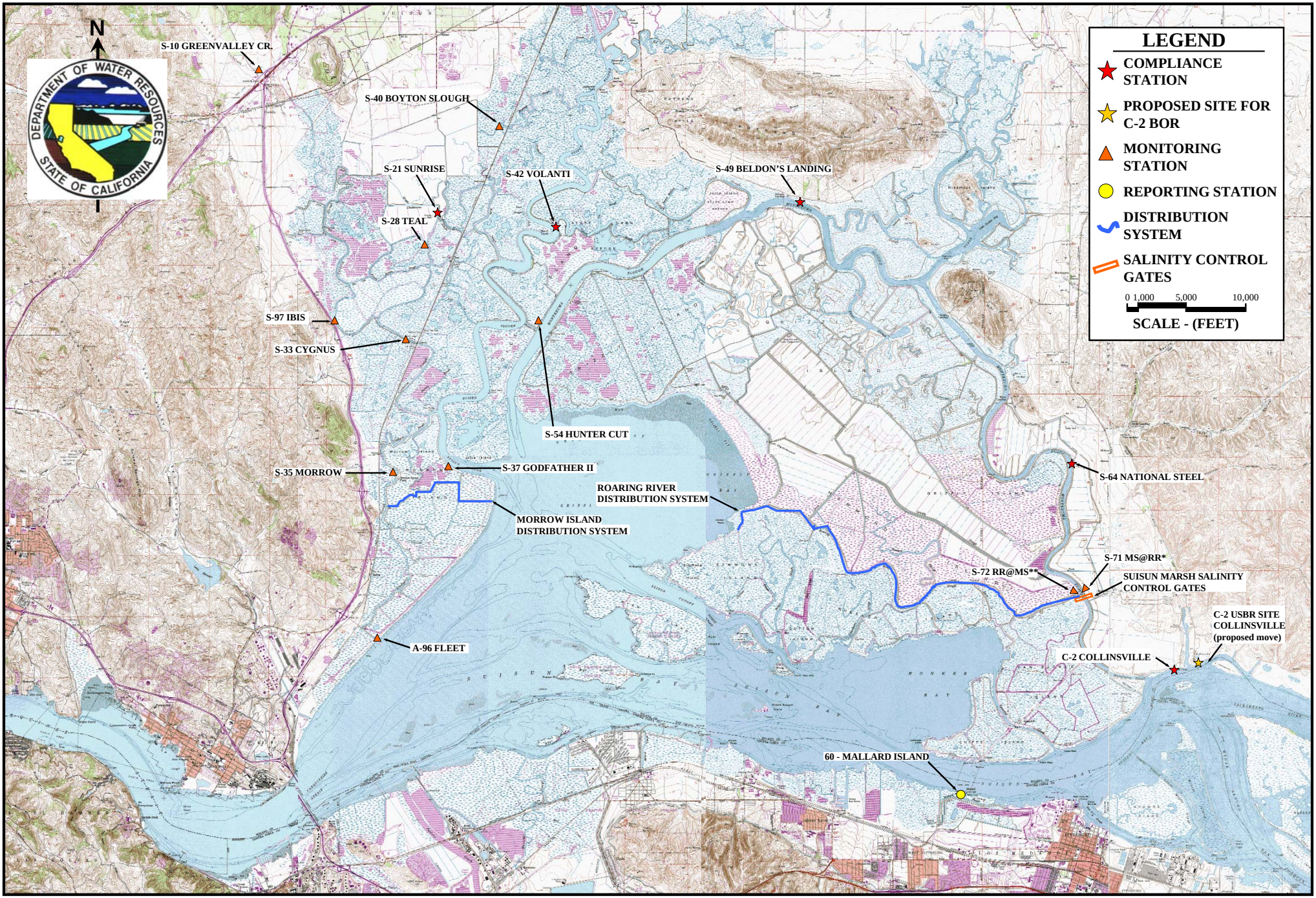


*Preliminary DWR, O&M Delta Outflow data and precipitation from Fairfield Water Treatment Plant.

Figure 4. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations March of 1997-2006



****Data not available for S21 due to flooded roadways.



SUISUN MARSH PROGRAM WATER QUALITY MONITORING AND CONTROL FACILITIES